

forming a planarized upper surface of said conductor planar with the upper surface of said layer of dielectric, and

forming a conductive film over said upper surface of said conductor, said conductive film forming a metal to metal metallurgical bond

and wherein said conductive film has a thickness of 1 to 20 nanometers.

C1 end
C2 3. (Amended) The method of claim 1 wherein said conductive film has a thickness in the range of 1 to 10 nanometers.

5. (Amended) The method of claim 2 wherein said electroless deposition includes first immersing said substrate in a solution of metal ions whereby a layer of nanoparticles of metal are formed on said upper surface of said conductor,

C3 second immersing said substrate in an electroless complexed solution of metal ions and hypophosphite ions whereby said conductive film formed comprises a metal-phosphide conductive film on said upper surface of said conductor, and

annealing said substrate in one of an inert or reducing atmosphere at a temperature of at least 300° C for at least 2 hours whereby excellent adhesion is obtained between said conductor and said metal phosphide conductive film.

7. (Amended) The method of claim 5 wherein said conductive film is selected from the group consisting of CoWP, CoSnP, and CoP.

C4 8. (Amended) The method of claim 2 wherein said electroless deposition includes first immersing said substrate in a solution of metal ions whereby a layer of nanoparticles of metal are formed on the surface of said conductor,

second immersing said substrate in an electroless complexed solution of metal ions and dimethylamino borane whereby said conductive film formed comprises a layer of metal-boron conductive film on said upper surface of said conductor and,

annealing said substrate in one of an inert or reducing atmosphere at a temperature of at least 300° C for at least 2 hours whereby excellent adhesion is obtained between said conductor and said metal boron conductive film.

C5
18. (Amended) A method for forming conductors with high electromigration resistance comprising:

forming a patterned conductor on a substrate,

forming a conductive film over said surface of said conductor, said conductive film

forming a metal to metal metallurgical bond and has a thickness of 1 to 20 nanometers.

C6
20. (Amended) The method of claim 18 wherein said conductive film has a thickness in the range of 1 to 10 nanometers.

C7
22. (Amended) The method of claim 19 wherein electroless deposition includes of first immersing said substrate in a solution of metal ions whereby a layer of nanoparticles of metal are formed on said surface of said conductor,

second immersing said substrate in an electroless complexed solution of metal ions and hypophosphite ions whereby said conductive film formed comprises a metal-phosphide conductive film [is formed] on said surface of said conductor, and

annealing said substrate in one of an inert or reducing atmosphere at a temperature of at least 300° C for at least 2 hours whereby excellent adhesion is obtained between said conductor and said metal phosphide conductive film

C8
24. (Amended) The method of claim 22 wherein said conductive film is selected from the group consisting of CoWP, CoSnP, and CoP.

25. (Amended) The method of claim 19 wherein said electroless deposition includes first immersing said substrate in a solution of metal ions whereby a layer of nanoparticles of metal are formed on the surface of said conductor,

second immersing said substrate in an electroless complexed solution of metal ions and dimethylamino borane whereby said conductive film formed comprises a layer of metal-boron conductive film on said surface on said conductor, and

annealing said substrate in one of an inert or reducing atmosphere at a temperature of at least 300° C for at least 2 hours whereby excellent adhesion is obtained between said conductor and said metal boron conductive film.

Please add the following new claims:

37. (New) The method of claim 2 wherein said electroless deposition comprises immersing said substrate in an electroless complexed solution of metal ions and hypophosphite ions whereby a metal-phosphide conductive film is formed on said upper surface of said conductor, and

annealing said substrate in one of an inert or reducing atmosphere at a temperature of at least 300° C for at least 2 hours whereby excellent adhesion is obtained between said conductor and said metal phosphide conductive film.

38. (New) The method of claim 19 wherein said electroless deposition comprises immersing said substrate in an electroless complexed solution of metal ions and hypophosphite ions whereby a metal-phosphide conductive film is formed on said surface of said conductor, and

annealing said substrate in one of an inert or reducing atmosphere at a temperature of at least 300°C for at least 2 hours whereby excellent adhesion is obtained between said conductor and said metal phosphide conductive film.

REMARKS

Claims 1-5, 7-10, 18-22, 24-27 and 35-38 are now in the application. Independent claims 1 and 18 have been amended to recite that the conductive film has a "thickness of 1 to 20 nanometers." Original claims 3, 7, 20 and 24 recited a "thickness of 1 to 20 nanometers." Claims 3 and 20 have been amended to depend from claims 1 and 18, respectively and to recite "1 to 10 nanometers" in place of "1 to 20 nanometers." Claims 2 and 24 have been amended by deleting "in the range of 1 to 20 nm thick" and by deleting "Pd, In and W" for purposes of clarity. Claims 5, 8, 22 and 25 have been amended to recite "said conductive film formed comprises" and to recite "inert or reducing" for purposes of clarity. Claims 6 and 23 have been canceled and replaced with claims 37 and 38, respectively.